Chapter 2

Suburbs and Suburban Sprawl

There is no more important community design problem than the redesign and adaptation of the American suburb--the symbol and logos of American affluence and technology and growth in the past forty years.
-- Sim Van der Ryn[1]

In the United States, more than one million acres of farmland are lost annually to development.[2] Between 1969 and 1983, population in the U.S. grew 16 percent, while vehicle miles traveled grew 56 percent.[3] Between 1970 and 1990, the Los Angeles metropolitan area grew 45 percent in population, but 300 percent in land area.[4] These are just some of the legacies of suburbanization since World War II.

Low-density development in a foothills suburb west of Denver, Colorado. S. Buntin.

Suburban communities demand careful evaluation because many are unsustainable--they use resources without a mechanism for adequately replenishing them; they are low-density in nature, replacing wilderness with grass lawns, farmland with strip malls; they give priority to the automobile over the pedestrian; they lack economic and cultural diversity; and the list goes on. But to say that many suburbs are unsustainable is not enough. What is unsustainable about them? How did they get that way? What are the economic, environmental, and social costs associated with a sprawl existence?

Why Focus on Suburban Communities?

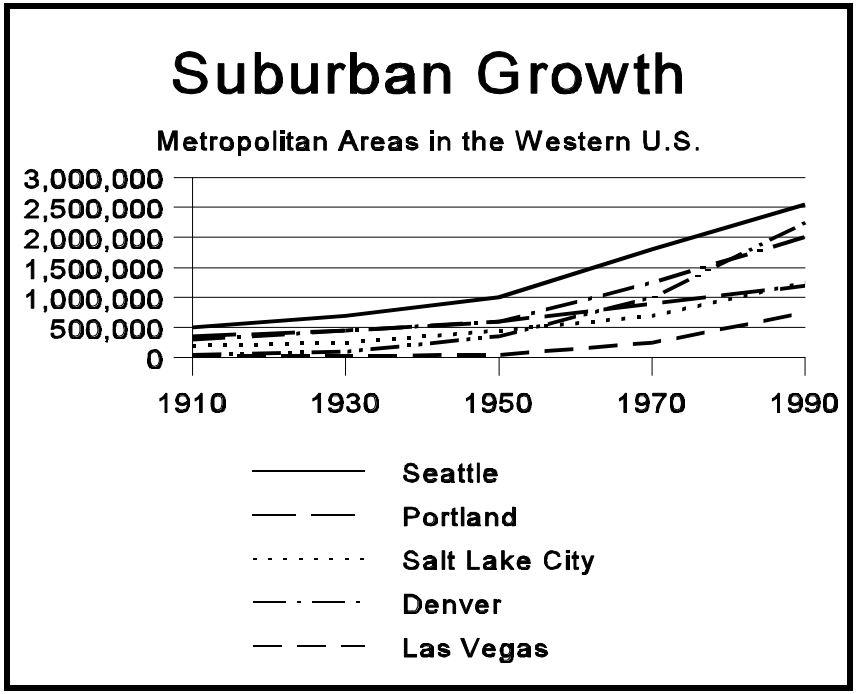
Suburban communities warrant focus not because they are suburbs per se, but because of their common postwar development patterns. While central cities are generally high-density and often based on a grid street pattern, and rural areas are very low density and preserve--whether intended or not--agricultural and natural open space, suburbs are often neither city nor country. And they are

generally not a happy medium somewhere in between. Rather, postwar suburbs especially are low-density settlements comprised of commercial strip and enclosed mall retail centers, landscaped office parks, and relatively large-lot residential subdivisions, predominantly automobile-based.

Perhaps suburban trends would not be so significant if suburbia wasn't home to so many people. Today, over half of America's population lives in suburban settings.[5] Moreover, suburban populations and geographic boundaries in many metropolitan areas are growing at an alarming rate, especially in the Western U.S. Here, thirteen states make up the most urbanized region in America.[6] The Seattle metropolitan area, for example, has grown from just over one million people in 1950, to nearly three million in 1995.[7] In that same time span, the Phoenix metropolitan area surged from 350,000 people to 2.5 million.[8] And the growth does not appear to be slowing, at least not on the suburban fringe.

In fact, many metropolitan areas have grown precisely at the expense of the central city. In Detroit, the metropolitan population increased from 3,246,000 in 1950 to 4,382,000 in 1990, but the City of Detroit itself decreased from 1,850,000 to 1,028,000 in that same time span.[9] Similar proportions of metropolitan area increases with central city decreases occurred from 1950 to 1990 in Cleveland; Syracuse; Louisville, Kentucky; and Harrisburg, Pennsylvania.[10]

Why are these statistics important? As later sections will show, most suburban growth is unsustainable: it does not provide for the equitable preservation of the built and natural environments, cultural heritages, and economic opportunities. While many residents moved out of the central cities to avoid congestion, find better

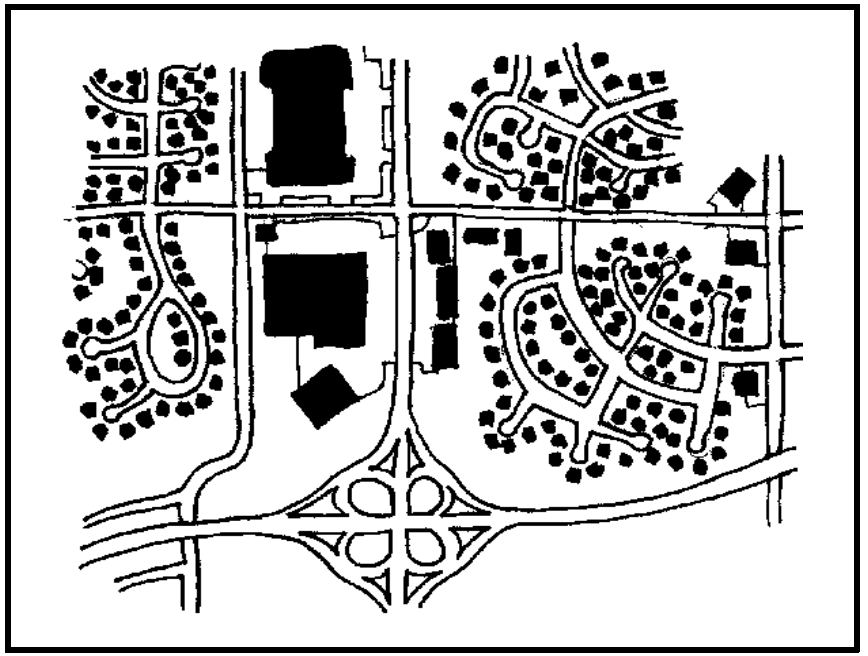


The Denver Post.

schools, feel safer, and purchase single-family homes, they also encouraged pollution, destroyed natural habitat, increased traffic congestion, and directly and indirectly contributed to a host of other ills.

The fact that suburban areas are so large and growing so rapidly, imposing a variety of adverse affects on society and the built and natural environments, demands that suburban development be reevaluated. Further, it demands that many core suburban areas be redeveloped with sustainability in mind--and in action. Unsustainable land use activities must be stopped and then reversed precisely at the locations where they are most prevalent.

While suburbs come in all shapes and sizes, they are also distinguished from other communities because of their relationship to larger, and usually older, central cities; and because of their interrelationships (acknowledged or not) between other suburbs of those same central cities. Such geographically, economically, and even politically linked cities directly affect their metropolitan neighbors through land use and other decisions. Being a suburb, or part of a suburban setting, means being a member of a metropolitan region. And sustainability of the suburb or related community can only be found ultimately in the context of regional sustainability. Individual efforts must go hand-in-hand with regional collaboration.



A typical suburban land use pattern: arterial street bounded by strip retail and residential subdivisions with curvilinear street patterns. S. Buntin.

Postwar suburban areas are largely unsustainable for two reasons. First, they are based on sprawl, and have numerous costs associated with that orientation. This will be discussed in detail in the next section. Second, they are based on an entrenched vision of the "American Dream," which itself leads to sprawl.

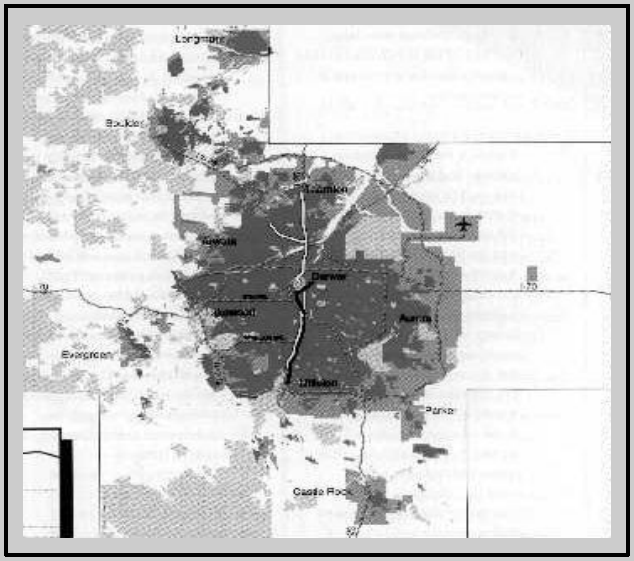
Denver, Colorado: An Example of Unconstrained Suburban Growth

"Smart growth," says Colorado Governor Roy Romer, "is about developing visions for the future of communities, regions and the state and developing strategies to accomplish these visions."[11] And the challenge is certainly real, especially in the Metropolitan Denver region. But Denver's growth--while perhaps economically strategic for developers--has been anything but strategic for the entire region. Huge master planned communities like Highlands Ranch to the south and Rock Creek to the northwest contribute to residential sprawl, quickly replacing what was once agricultural land and high plains brush with house after identical house, Kentucky bluegrass lawns, and overly wide streets that mandate use of the automobile. Smaller, piecemeal residential developments do the same, and large business parks and "big box" retail round off the threesome of contemporary suburban development.

The Denver Regional Council of Governments estimates that another 750,000 people will move into the metro area by the year 2020.[12] That would bring the population to 2,800,000, up from just 1,000,000 in 1960.[13] Such population growth is almost expected given Denver's proximity to the mountains, the new Denver International Airport, the temperate climate, and a renewed Lower Downtown. The "hows" and "wheres" of that growth are cause for the greatest concern.

DRCOG, in its *Metro Vision 2020* framework, has identified four possible alternatives for future development: compact, corridor, satellite, and dispersed.[14] Dispersed development is growth under current local and regional trends and policies. In this scenario, low-density residential development continues on the edges of existing suburban areas, adding an additional 350 square miles of urban area to the existing 530, which itself is up from 300 in 1970.[15] Yet if the metro area cities and counties were to actually build out their current comprehensive plans for growth, the urbanized area would swell to 1,150 square miles, an area larger than the cities of Los Angeles, San Diego, San Francisco, San Jose, Oakland, and Long Beach, California, combined.[16]

By 2020, metro area dispersed growth would look like this:



Denver metro area, 1990 (dark) to 2020 (light).
Denver Regional Council of Governments.

The *Metro Vision 2020* plan hopes to effectively manage such sprawling development through regional collaboration, but the future is uncertain. Suburban growth in select Denver suburbs, 1950-1990:[17]

Aurora
1950 - 11,421
1970 - 74,974
1990 - 222,110
Boulder
1950 - 19,999
1970 - 66,870
1990 - 83,312
Broomfield
1950 - 176
1970 - 7,621
1990 - 24,636
Castle Rock
1950 - 741
1970 - 1,531
1990 - 8,708
Golden
1950 - 5,238
1970 - 9,817
1990 - 12,363
Lakewood
1950 - 3,932
1970 - 92,787
1990 - 126,481
Westminster
1950 - 2,322
1970 - 19,432

According to Anthony Downs, author of *New Visions for Metropolitan America*, this vision is based on five elements:[18]

- Ownership of detached single-family homes on spacious lots
- Ownership of automotive vehicles
- Working in low-rise workplaces--offices or industrial buildings or shopping centers--in attractively landscaped parklike settings
- Residence in small communities with strong local governments
- An environment free from the signs of poverty

Combined, these add to a society which promotes "unconstrained individualism,"[19] yet ironically a lack of diversity in the built suburban form. They also add to economic, environmental, and social costs that can be devastating to the community and its region.

Kenneth T. Jackson, in *Grabgrass Frontier*, similarly identifies five characteristics of postwar suburbs: peripheral locations, low density, architectural similarity in housing, available and affordable housing, and economical and racial homogeneity.[20]

A pre-World War II Denver suburb's street is pedestrian-oriented and walkable. S. Buntin.

A post-World War II Denver suburb's street is auto-oriented and uninviting to pedestrians. S. Buntin.

It is worth asking whether the vision of the American Dream promotes the characteristics, or whether the characteristics promote the American Dream. Undoubtedly, they are inextricably linked: single-family homes on spacious lots and low-rise workplaces in attractively landscaped parking settings are built in peripheral locations and at low densities. Available and affordable housing that is architecturally similar results in ownership, while the large-scale desire for ownership at an affordable price dictates peripheral locations and similarity in architectural styles. The desire for residence in small communities with strong local governments manifests itself in peripheral locations at low densities, converting one-time small towns to suburbs on the periphery of metropolitan areas. Economical and racial homogeneity stem from the vision of an environment free from the signs of poverty. Yet as economical and racial segregation continue, the vision appears to be more firmly entrenched.

Suburban Sprawl

Sprawl is the manifestation of unchecked suburban growth. It is, in many ways, the antithesis of sustainable suburbanization, for eventually it places too large a burden on the natural, economic, and cultural environments. And while "sustainable suburbanization" may seem like an oxymoron, it is so only because so much suburban growth has been unplanned, ineffectively planned, or uncontrollable. The case studies reviewed later demonstrate that suburbs can be far more sustainable than they are today.

Sprawl can be difficult to define because it takes many shapes over many periods of time. Still, it is easy to identify. It may include street after curvilinear street of non-unique, non-localized housing; miles of single-story strip malls surrounded by vast parking lots; or clusters of low-story office and industrial buildings on the edge of town--most accessible only by automobile.

The Causes of Sprawl

As a process, sprawl is based fundamentally on land development--converting agricultural, natural, or otherwise "vacant" land to other uses, often residential. As values rise in a city's central business district, the incentive for a commercial enterprise to remain is low because the value of land just outside the city is significantly less.[21] As businesses move to the periphery of urban areas to take advantage of low costs, residential subdivisions and other real estate developments follow, and so do people.

But sprawl also occurs because transportation access has enabled it to. Even in late 19th Century cities, streetcar lines went beyond the city center and into adjacent land deemed ripe for residential--at least upper-class residential--development.[22]

Commercial facilities and services to meet the needs of new residences logically followed, as they do today thanks in part to federally and state subsidized highways. In fact, residential "bedroom" communities are the suburb types which have pioneered the most remote corners of metropolitan regions, especially in the 1970s and 1980s.[23]

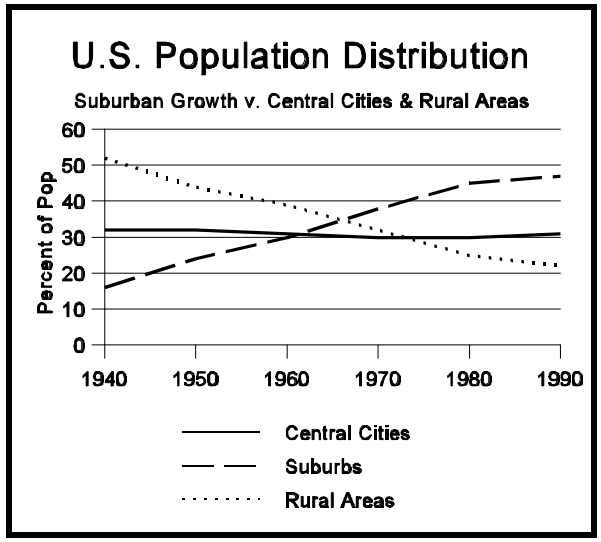
American urban development has not always taken the shape of sprawl, however. While all metropolitan areas have grown, it was not until after World War II that suburbanization as we know it today took hold. Prior to the war, many Americans lived in small towns and villages, either far from or fairly close to larger cities. America was still largely rural. But at the end of the war, a number of factors rapidly changed development patterns.

First, jobs were readily available in factories that had been expanded to supply the war effort, and these factories were located in central cities.[24] Residents from farms and small towns moved to the cities to fill the jobs, and they needed housing. Low-density peripheral housing provided proximity to the city without actually being in the "hustle and the bustle" of the city.

Second, high marriage and birth rates after soldiers returned home increased the need for housing. The desire for single-family housing itself was promulgated in part by architects who developed single-family house plan books; and by developers who constructed new subdivisions. Additionally, family magazines such as *Ladies' Home Journal* promoted a "suburban" life style in which each new family had the opportunity to live in a quiet neighborhood, plant a garden reminiscent of the country, and still commute easily to the city for work.[25]

Suburban tract housing encroaches upon prime agricultural land in California. J. Clark, U.S. Department of Agriculture.

Third, the federal government, through the Federal Housing Administration, approved billions of dollars worth of mortgage insurance for new tract housing on the outskirts of cities.[26] Moreover, the FHA not only underwrote mortgage loans, but it dictated neighborhood design through the issuance of "standards" which maximized lending security.[27] These designs advocated large yards; curving streets without grids and without through access; and segregated land uses, keeping industrial from commercial from residential. Because builders were eager for business--more than 33 percent of the mortgages were backed by FHA at the time--they accepted the standards, which became the basis for national building and engineering codes evident in suburban settings today.



The Denver Post.

Fourth, the mortgage interest deduction allowed on federal income taxes has greatly promoted the opportunity for the "average" family to own a home. With the deduction, home-owners can actually make less money and yet qualify for a higher priced home because, over a year, the money that would go to taxes instead goes to pay for the home. The majority of those homes have been single-family, relatively large lot, on the periphery of cities in which the owners generally work.


The iconography of suburbia. P. Katz.

Fifth, federal and state governments invested heavily in highways and streets, most notably through the 1956 Interstate Highway Act which provided for a 42,500-mile interstate system of which 90 percent was paid by the federal government.[28] New roads enabled families to move to newly created subdivisions, next door or in the next state. Additionally, private transportation received ample

taxpayer subsidies because it was considered a "public good," while mass transit alternatives such as streetcars were forced to pay their own way. Ultimately, suburbanites came to depend on the automobile, which in turn required more and more infrastructure.[29]

Finally, technology and economies of scale allowed builders to create huge new subdivisions in a fraction of the time and cost it took before the war. Developers such as the father and son team of Abraham, William, and Alfred Levitt could now build affordable homes away from larger cities, as they did with Levittown on former potato fields on New York's Long Island. In a construction process divided into 27 distinct steps, the Levitts built up to 36 homes a day, eventually constructing 17,400 single-family homes for a population of 82,000 residents in the late 1940s and early 1950s.[30]

A report released in 1996 and sponsored by the Bank of America, California Resources Agency, Greenbelt Alliance, and The Low Income Housing Fund analyzes growth patterns in California and finds that while suburban sprawl has both helped to fuel California's "unparalleled economic and population boom, and that it has enabled millions of Californians to realize the enduring dream of home ownership," it has also created a full menu of significant costs which the state and its citizens "can no longer afford."[31]

The current rate of suburban growth appears that it cannot be sustained, especially from an environmental perspective. The report finds that rapid suburban growth has increased even in the last decade, raising two questions: How, and why?

If growth has occurred despite these costs, *what* has enabled it continued? There are three main factors. First, many of the costs have either been ignored or are unknown. In many economic models, for example, societal costs that include depletion of resources and air pollution are not adequately assessed against the product or process that causes the environmental damage. Without the higher cost, consumers are less likely to understand that the additional costs even exist. The costs are not paid by the responsible party and fall to society at large, though society is not fully aware.

Second, the mechanisms in favor of sprawl-oriented development are large and not easily steered in other directions. Moreover, initial costs of residential development, for example, are relatively low and they do provide opportunities for families to own homes. The combination of large industries oriented toward low-density development, and people who are willing to buy into such development because it is convenient and initially inexpensive and provides lots of personal space, has much momentum.

And third, American society has become accustomed to a

seemingly limitless ability to expand. This "pioneering" mentality--based on the vision of the American Dream discussed earlier--often results in development that is land-consuming "by right." Fundamentally, many Americans want large yards and wide-open spaces, and believe it is within their rights to have it. While some Americans are moving back into cities and older suburbs, the urge to move away from urban centers and people and farther into the frontier is strong, perhaps even innate. Yet when everyone pushes on, no one really "escapes" for long.

There are also several factors for *why* sprawl development continues.[32]

The decentralization of employment centers has led to new development on the periphery of metropolitan areas. While central cities were the predominant employment centers for many years, they are now challenged by "edge cities" like Denver's Tech Center.

New subdivisions--predominantly housing--have pushed further and further into agricultural and environmentally sensitive areas, seemingly without end. In Golden, Colorado, for example, new single- and multifamily housing tracts climb higher and higher into the once-pristine foothills.

A "typical" suburban strip commercial center. S. Buntin.

Americans have become increasingly dependent on the automobile for commuting to work, going on shopping trips, taking children to school and recreational activities, and for other reasons. In the metropolitan Denver area, for example, vehicle miles traveled increased from 15 million miles per weekday in 1970 to 45 million in 1995. At current trend levels, VMTs will be at 73 million in 2020.[33]

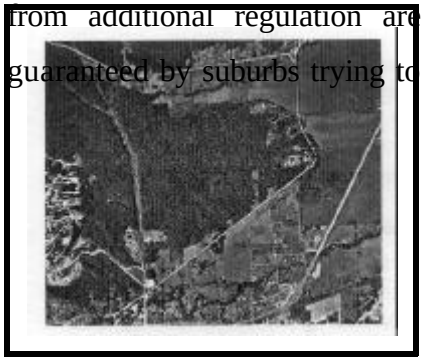
Many older communities, including central cities and first-ring suburbs, have become isolated. Middle-class mobility in housing and employment, as well as via the automobile, has allowed residents to

live closer to recreation which may mean living farther from work. Alternatively, they live closer to work, which is now in newer suburbs. Either way, older neighborhoods have become abandoned, leading to disrupted social stability, increased economic disparity between older communities and newer suburbs, and inaccessibility of jobs to the poor and working class residents.

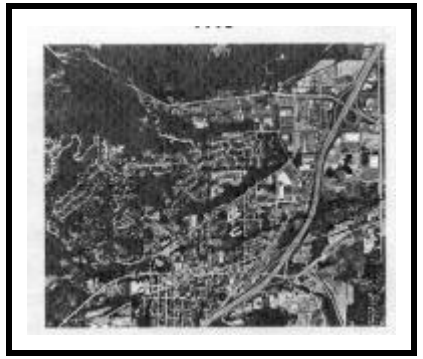
There is a general perception that new suburbs are safer and more desirable than existing communities, with special emphasis placed on streets, schools, and a "small town" atmosphere. "Fear of crime is a great motivator for development," says Joe Verdoorn, a Phoenix planner. "Everybody wants to be on the far side of the freeway."[34]

Land is often less expensive on the metropolitan fringe. People move where housing costs are seemingly less expensive, and starter homes especially are still within the financial reach of a typical family, at least initially.

There is a belief that suburban communities give businesses more flexibility to grow, especially as tax incentives and freedom from additional regulation are guaranteed by suburbs trying to develop a strong business base. Similarly, many businesses feel suburban residents are better educated, leading to a more effective workforce.



Issaquah, Washington, 1961...
Redevelopment for Livable Communities.



... and 1995.
Redevelopment for Livable Communities.

Technological changes have allowed employment centers to decentralize. The age of the telecommunication "super-highway," via the Internet, may facilitate this trend.

Highway and automobile subsidies by federal and state governments, discussed previously, ensure that development is dispersed and automobile-based. While individuals are responsible for paying direct costs associated with owning automobiles--such as the vehicle itself, gasoline, insurance, and perhaps parking--they often do not pay the true costs laid upon society as a whole, including air pollution, traffic congestion, road damage, and expansion of

Sprawl leads directly to air pollution: Denver's infamous "brown cloud." S. Buntin.

infrastructure.

Local land use policies, promulgated either by segregated zoning districts or no- or slow-growth practices, ensure that uses are separated from each other, and that new development is on the periphery of a city. A limit on the number of residential building permits in the City of Boulder, Colorado, for instance, has inadvertently resulted in residential sprawl just outside of Boulder's surrounding open space buffer, where adjacent cities have not adopted similar measures.

In a number of communities, fiscal incentives have allowed local governments either to pick among land uses based on tax considerations, or not to recover the true costs of development through taxes. Accommodating affordable housing will not provide high tax revenues and is not given other fiscal incentives, for example, so is overlooked. However, strip-style retail does and is thus given priority. In Utah a law was passed which stipulated that as property values rise, the overall tax rate of a given area must fall; this then is coupled with language that limits the amount local governments can charge developers for new services, including roads and sewers.[35] Similarly, the Colorado tax structure indirectly promotes sprawl because local governments cannot raise property taxes beyond a certain ceiling. In order to raise revenue, then, these communities are forced to accommodate shopping malls and other retail structures.

"We were losing all our sales tax dollars to these big regional malls," said Steven Boand, former mayor of Castle Rock--a suburb south of Denver. "To compensate, we were forced to let a big outlet mall come in here. We were roundly criticized for that, but our town was teetering on the verge of bankruptcy."[36]

The Costs of Sprawl

Suburban sprawl is expensive. While it may appear to be less expensive for businesses moving to new greenfield sites, for developers to build on undeveloped land on a city's periphery, or for a family to buy a new home in a new subdivision--at least initially--sprawl is certainly costly to society as a whole. These costs fall into six general categories: costs to taxpayers, costs to business, costs to residents of new suburbs, costs to residents of central cities and older suburbs, costs to farmers, and costs to the environment.[37]

Costs to Taxpayers

The major cost to taxpayers is of increased infrastructure needed to support new growth. In Ventura County, California, for example, it is estimated that over the next eight years, the county will need to spend $1.35 billion to widen roads and build interchanges to maintain and slightly improve the current level of service.[38] The cost would be much lower, but the county continues to grow as sprawl encroaches from Los Angeles. In the 1980s, the Minneapolis-St. Paul metropolitan area spent over $1 billion adding capacity to its roadway system; 85 percent of that, however, was spent on its most affluent suburbs in the southwestern part of the metro area.[39]

According to a report released recently by the U.S. Office of Technology Assistance, low-density suburban development costs on average 25 percent more for roads, 15 percent more for utilities, and five percent more for schools than do planned higher-density developments.[40]

Office park development halfway between Boulder and Denver is not ecologically integrated into the site and ruins the view of the mountains. S. Buntin.

Recent research also demonstrates the differences in cost per single-family dwelling unit between San Francisco-area suburban and urban infill housing.[41] Streets and roads in suburbs cost $3,000 per unit, while for infill sites cost $800. Utility extensions cost $5,000 in suburbs, but only $950 for infill. While the average suburban

household uses 400 gallons of water per day, the average infill household uses only 200. Similarly, while a suburban house uses 150 therms of natural gas, an infill house uses only 60 therms. And finally, a suburban house uses on average about 10,000 kilowatthours of electricity per year, while an infill house uses only 6,000 kWh per year.

But there are other costs to taxpayers, as well. They pay the costs of attempting to solve environmental problems associated with development of virgin land on the metropolitan fringe. Large, government-funded task groups, for example, may be necessary to tackle regional issues such as air pollution and water quality directly resulting from sprawl.

There are also costs associated with dealing with social problems that develop in the central city and older neighborhoods when they become neglected or abandoned as a result of development on the periphery. As older neighborhoods are left behind by middle-income residents for newer suburban sites, for instance, the poverty level rises and crime intensifies in these areas. In fact, as concentrations of poverty increase beyond ten percent in a neighborhood, violent crime rates appear to increase exponentially.[42] Violent crime rates in Minneapolis's poorest neighborhoods between 1987 and 1989 were ten times greater than the metropolitan average, and thirty times greater than the suburban average.[43] Taxpayers across the metropolitan region, however, pay for efforts to decrease the crime--either directly through taxes or personal income for protection services, or indirectly through fear.

Costs to Business

Sprawl is costly to business, as well. Because it reduces the quality of life in a community, businesses often move away from or bypass communities with high traffic congestion, high housing costs, and other negative consequences of sprawl when relocating. Additionally, the effects of sprawl can cause taxes and development costs to rise throughout the metropolitan area, resulting in a regional rise in the costs of both residing in the area and doing business.[44] These costs are a large reason that many companies are choosing to move out of California, for instance, and into neighboring states like Nevada,

> ***Moving outward from a dated or inconvenient core is the easiest individual solution and provides what consumers seek in most marketplaces. The larger societal costs or impacts of these development patterns are not considered when the firm's or individual's choices are made.***
>
> **Robert W. Burchell**
> ***Understanding Sprawl*[45]**

Utah, and Arizona.

Businesses can also be asked to foot a large portion of the bill to help pay for sprawl's consequences. For example, businesses in metro Denver often pay for carpooling and mass transit programs for employees to help meet the region's ambient air quality standards.[46]

Sprawl creates a spatial mismatch between employers and the labor market, both for low-wage jobs and low-skilled workers who live in the central city, and for white-collar jobs and middle-income workers who live in the suburbs.[47] While opportunities may exist for workers outside of their current neighborhoods, it may be difficult or impossible for them to commute, effectively removing them from portions of the job market. In the Chicago metropolitan area, for example, it is estimated that the "spatial mismatch" cost of working in a peripheral suburban location versus a central city location is between $300 and $900 per employee.[49] Spatial mismatches tend to result in higher labor costs and reduced worker productivity.

> ***Once concentration of poverty, disinvestment, middle-class flight, and sprawl occur, they become more costly and detrimental than any other set of problems facing American society today.***
>
> **Myron Orfield**
> ***Metropolitics:***
> ***Social and Economic Polarization Vs. Community and Stability[48]***

Abandoned investments in older neighborhoods may also result as the neighborhoods themselves face decline. Businesses oriented specifically toward providing infrastructure--including gas, electric, water, telephone, and cable utilities--may be hit the hardest as they are no longer able to collect revenue for capital that has already been invested.

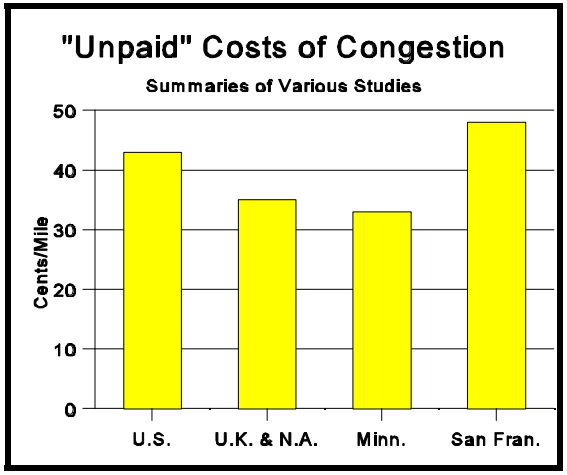
Costs to Residents of New Suburbs

Residents of new suburbs, while initially spending less by moving into a peripheral location, face costs as well. These include the necessary costs of owning automobiles. The average two-car family, for instance, spends nearly $9,000 annually--or 25 percent of the household's income after federal taxes--on owning and operating automobiles.[50]

Time and money are also lost by extended commute times due either to a longer commute or to increased traffic congestion, or both. According to the Federal Highway Administration, two billion hours a year are lost to traffic delays above and beyond normal commuting time, with a projected yearly cost of $34 billion.[51] Commuting by automobile is necessary in many areas because suburbs generally have poorly developed public transit systems, and

because there is a jobs-to-population imbalance among suburbs. Various studies, shown in the chart below, demonstrate the unpaid costs--i.e., costs imposed on other drivers by individual commuting decisions--of peak hour and congestion auto travel (for the U.S. generally, for the United Kingdom and North America generally, for Minneapolis, and for San Francisco).[52] Additionally, congestion in the Chicago metro area costs society an estimated $150 to $500 per year for each employee of a new suburban commercial or industrial facility.[53]

Studies have also shown that suburban residents earn lower wages at suburban workplaces than at central city workplaces--perhaps the largest reason businesses move to greenfield sites to begin with. These studies conclude that while men earn 2.5 percent less in newer suburbs, women earn 10 percent less, based on the theory that suburban residents are willing to accept lower wages in exchange for a reduction in commuting times.[54]



Persky and Wiewel, graph by S. Buntin.

Residents of new suburbs may also be asked to pay the costs of new infrastructure, either through impact fees passed on by the developer, or through increased property taxes. Property taxes on a new home in a new subdivision in Jeffersonville, Indiana--a suburb of Louisville, Kentucky--were nearly three times the amount for a similarly valued house in an older, adjacent neighborhood.[55]

Finally, new suburbanites pay social costs, as well. Suburbs cause a sense of fragmentation and physical and social disconnection for many residents.[56] Peripheral settlements rarely provide social gathering points for neighbors, and if they do most are so far away that they require an auto to get to them, leading to social isolation and loss of identity.

Costs to Residents of Central Cities and Older Suburbs

While wages may be lower in suburban areas, U.S. Census data shows that per capita income is actually higher in many suburban

City-Suburb Per Capita Income Gaps, 1989[57]

Metro area	Per capita income - 1989			City-suburb ratio
	Metro area	City	Suburb	
Detroit, Michigan	$15,694	$9,443	$17,874	53%
Cleveland, Ohio	15,092	9,258	17,317	53
Milwaukee, Wisconsin	14,785	11,106	17,868	62
Harrisburg, Pennsylvania	14,659	11,037	15,251	72
Syracuse, New York	13,918	11,351	17,868	77
Louisville, Kentucky	13,600	11,527	14,564	79
Columbus, Ohio	14,516	13,151	16,169	81
Richmond, Virginia	15,848	13,993	16,777	83
Houston, Texas	15,091	14,261	16,012	89
Indianapolis, Indiana	15,159	14,478	16,120	90
Madison, Wisconsin	15,542	15,143	15,976	95
Nashville, Tennessee	14,567	14,490	14,808	98
Raleigh, North Carolina	16,170	16,896	16,377	103
Albuquerque, New Mexico	13,954	14,018	11,892	118

neighborhoods. According to David Rusk, "The city-suburb per capita income ratio is the single most important indicator of an urban area's social health."[58] He argues that those metropolitan areas with the highest central city incomes compared to their suburban counterparts are the most healthy. Those with the lowest central city per income capita--see table on previous page--are the most adverse to residents of central cities and older suburbs.

Residents of central cities and older suburbs lose jobs and access to jobs as employment becomes decentralized. Especially hard hit are the low-income citizens who rely predominantly on public mass transit, for without a car it is difficult or impossible to commute to suburban work locations.

Sprawl also results in economic segregation and loss of social stability for older neighborhood residents, as middle-class residents move farther and farther from the central city. Subsequently, jobs are no longer created in older neighborhoods but rather in developing suburbs. Between 1980 and 1990, for example, jobs declined in Minneapolis and St. Paul and their inner suburbs, but increased greatly in their southwestern developing suburbs. In fact, though the suburbs represent only 27 percent of the metropolitan region's population, they gained 61 percent of the new jobs.[59]

Additionally, individual homeowners and small businesses may see a decline in property value and business volume as middle-income residents leave. While the corner grocery store in an older, mixed-use neighborhood was economically viable when neighborhood vacancy rates were low, before sprawl, as middle-income residents move out and vacancy rates increase, the grocery store no longer has a critical mass of local residents and shoppers for it to remain economically viable. As residents leave, the owner's likelihood of remaining in business is greatly diminished. Even if the store does stay in business, decreased visibility is manifested in higher prices and reduced selection.

Finally, as middle-income residents shift to the suburbs, so too do government services and political power. A lack of services and political support equate to physical, economic, social, and political under representation for residents of older, declining communities.

Costs to Farmers

Sprawl results in a permanent loss of agricultural land. In fact, because metropolitan areas are often situated along historically "strategic" locations, the agricultural land which is lost is usually of the highest value--the prime land.[60] It cannot simply be exchanged for other land, as the soil, nutrient levels, precipitation, and climate

Farmland is easily converted to suburban uses once the roads are in place. S. Buntin.

are all likely of different compositions than they were before.

The rate of agricultural land lost to suburbanization is alarming. In the Puget Sound Basin of Washington--home to Seattle and its suburbs--200,000 acres of farmland were lost between 1967 and 1984; meanwhile, 200,000 acres of intense suburban and 150,000 acres of streets and highways were added.[61] In California's Central Valley--the nation's leading agricultural region--nearly 500,000 acres of productive farmland were lost between 1982 and 1987 alone.[62] Overall, more than one million acres of farmland are lost to development annually in the U.S.

Crop productivity declines as pollution directly attributable to sprawl increases, as well. Ozone pollution alone can reduce crop yields by up to 30 percent, lending to agricultural losses from pollution estimated at over $200 million per year, according to the Agricultural Issues Center at the University of California-Davis.[63]

Traditional farm communities can also lose their rural identity as sprawl encroaches and, like Colorado towns Franktown and Parker, they become bedroom suburbs. Similarly, sprawl may seem like an inevitable outcome to owners of agricultural land. As such, it creates uncertainty for landowners, who fail to continue investing in their land as they wait to "sell out" to developers willing to pay considerably more for land than it is worth under current agricultural uses.

Costs to the Environment

The largest costs of all are to the natural environment. Natural areas, including unique and sensitive lands such as wetlands, are lost forever to the low-density ways of sprawl: a new 50-mile stretch of freeway in Phoenix has resulted in the loss of 25,000 acres of Sonoran Desert in just three years;[64] between 42,000 and 60,000 acres of forestland and other wildlife habitat are lost annually to

suburbanization in Washington state;[65] eighty percent of the original coastal marshes in the San Francisco Bay area--roughly 200,000 acres--have been lost to development.[66] In fact, between 1982 and 1992, 5,154,000 acres of forestland alone were converted to urban uses in the U.S.[67] In metropolitan areas across the country, tremendous amounts of undeveloped land are lost to new subdivisions annually.

Development not only reduces critical habitat for plants, fish, and wildlife, but it changes drainage patterns and microclimates which can lead to devastating floods and damage from high winds. Recent flooding in suburban areas of California and the Pacific Northwest demonstrate all too well that streets and concrete gutters are not an adequate replacement for the drainage patterns and erosion control inherent in natural landscapes.

Air pollution is another major outcome of sprawl. Because the automobile is essential for most residents of suburbia, and because vehicle miles traveled are steadily increasing, air quality is significantly hindered. Air pollution, of which 33 percent is attributable directly to private automobile use, is not only aesthetically unappealing, but is hazardous to human and environmental health, as well.[68] The American Lung Association estimates that lung diseases, including respiratory tract infections, asthma, and lung cancer stemming in large part from air pollution, are responsible for more than 300,000 deaths in America every year.[69]

Loss of critical wildlife habitat is one of the largest environmental costs of suburban sprawl. Western Area Power Administration.

Additionally, air pollution is expensive: in Southern California--where the South Coast Air Quality Management District mandates the strictest air pollution regulations in the country--air pollution costs $7.4 billion per year, or about $600 per resident.[70]

Suburban commuters in the metropolitan Chicago area are likewise responsible for up to $650 each in indirect costs resulting from air pollution annually.[71]

Traffic congestion between auto-oriented suburbs leads to air pollution from auto emissions. Center for Livable Communities.

Water quality and quantity are also adversely affected. While irrigation for agriculture is the largest use of water across Colorado, for example, localized areas under heavy development pressures--such as Douglas County just south of Denver--threaten to deplete groundwater sources. Ten years ago Douglas County had a population of 20,000; it now has a population of 110,000, and is zoned for half a million people. Yet, the life span of the aquifers supplying water to most of the county's residents is well under 100 years and falling rapidly.[72] Meanwhile, in the Minneapolis-St. Paul metropolitan area, the Praire Du Chien aquifer has become severely polluted and depleted due in large part to sprawl in the southwestern quadrant of the region.[73] Water quantity and quality are inextricably linked to development pressures on the metropolitan fringe.

The Unsustainable Outcomes of Sprawl

Whether evaluated at specific suburban levels, or on the scale of entire metropolitan regions, sprawl is economically, environmentally, and socially costly. These costs result in inequities that predominantly favor residents of the newer suburbs. Yet even these residents pay as the entire metropolitan region suffers. And sprawl seems to feed upon itself like a parasite intent on devouring its host: "My rule of thumb is that the faster the rate of sprawl, the faster the rate of abandonment," says David Rusk, former mayor of Albuquerque. "You look at Detroit, which has lost a million or so people. It consumed land at thirteen times the rate of population growth."[74]

Contemporary, postwar development patterns that are low-

density, land consuming, and auto-oriented cannot be sustained over the long term. Their costs are too high economically, environmentally, and socially. While low-density development appears to be the most cost-effective approach in the short term, that is only because it does not account for its full costs to society. When the true costs discussed earlier in this chapter are factored in, sprawl development falls far short of paying its own way.

But sprawl is unsustainable for more than economic reasons. Even if a fair price could be placed on lost natural ecosystems, the varied habitats and species that once inhabited them can never fully be replaced, either in number or in quality. Views lost to miles of similar rooflines could perhaps be returned, but the natural drainage patterns and slopes in all likelihood never could be. Likewise, prime agricultural land now developed cannot be returned to its former state. Once natural and agricultural lands are lost, so are open spaces and the recreational opportunities that come with them, plant and animal species, the environment's natural ability to filter many pollutants, the region's ability to produce food, community identity which comes with greenways and other open space buffers, the region's ability to preserve its natural heritage, and a wealth of other items.

Because sprawl leads to segregation of race, income, and physical uses, as well as social isolation and a lack of community cohesion, it is socially unsustainable, as well.

Only in redeveloping the suburbs can regions and their communities secure a more sustainable future.

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